



King's Research Portal

DOI:

[10.1080/1359432X.2016.1182157](https://doi.org/10.1080/1359432X.2016.1182157)

Document Version

Peer reviewed version

[Link to publication record in King's Research Portal](#)

Citation for published version (APA):

Devloo, T., Anseel, F., De Beuckelaer, A., & Feys, M. (2016). When the fire dies: Perceived success and support for innovation shape the motivating potential of innovative work behaviour. *EUROPEAN JOURNAL OF WORK AND ORGANIZATIONAL PSYCHOLOGY*, 25(4), 512-524. <https://doi.org/10.1080/1359432X.2016.1182157>

Citing this paper

Please note that where the full-text provided on King's Research Portal is the Author Accepted Manuscript or Post-Print version this may differ from the final Published version. If citing, it is advised that you check and use the publisher's definitive version for pagination, volume/issue, and date of publication details. And where the final published version is provided on the Research Portal, if citing you are again advised to check the publisher's website for any subsequent corrections.

General rights

Copyright and moral rights for the publications made accessible in the Research Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognize and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the Research Portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the Research Portal

Take down policy

If you believe that this document breaches copyright please contact librarypure@kcl.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.

Devloo, T., Anseel, F., De Beuckelaer, A., & Feys, M. (2016). When the fire dies: Perceived success and support for innovation shape the motivating potential of innovative work behaviour. *European Journal of Work and Organizational Psychology*, 25(4), 512-524.

<http://dx.doi.org/10.1080/1359432X.2016.1182157>

Accepted for publication in *European Journal of Work and Organizational Psychology* on 02/02/2016

Previously not uploaded in Pure as I was not employed at a UK HEI.

Abstract

In recent years, there seems to have grown a perspective in the literature that innovation will have uniformly positive outcomes for individuals and organizations. This is unfortunate as innovative individuals may not always experience the assumed positive motivational consequences of being innovative at work. Our study aims to examine under which conditions engaging in innovative work behaviour may *not* lead to desired motivational outcomes. We conducted a longitudinal field study involving 100 industrial product design and electronic engineering students participating for seven days in an innovation boot camp. In support of our hypotheses, we found that day-level innovative work behaviour lead to higher basic need satisfaction at the subsequent day when perceived success and support for innovation were high. However, when these moderators were low, the hypothesized relationship became non-significant. Our study results yield useful suggestions for helping individuals in maintaining optimal motivation throughout innovation processes.

Keywords: Innovative work behaviour, perceived success, support for innovation, basic need satisfaction

Word count: 10016

Introduction

The extent to which organizations reach their innovative potential, has been linked to the willingness of its organizational members to engage in the development of valuable ideas, socio-political efforts to obtain sufficient support for ideas, and ultimately the realization of these ideas (Janssen, 2000; Scott & Bruce, 1994; West & Farr, 1990; Yuan & Woodman, 2010). However, such innovative work behaviours are highly demanding and require the performance of complex activities which are not automatically followed by desired or anticipated outcomes (Axtell et al., 2000). For example, an engineer who spends much effort on the development of a new product might ultimately fail to see his/her concept brought to market if it is not economically feasible. Such setbacks make it very challenging for individuals to maintain their energy and optimal motivation throughout an innovation process, potentially leading to demotivation. Yet, research on the motivational consequences of innovative work behaviour remains relatively underdeveloped (Anderson, Potocnik, & Zhou, 2014).

Our study aims to examine under which conditions engaging in innovative work behaviour (IWB) may *not* lead to desired motivational outcomes. To this end, we build on the notion that individual perceptions, cognitions, and expectations are likely to be reshaped and altered as a result of one's own innovative actions (Anderson, De Dreu, & Nijstad, 2004). In other words, undertaking innovative actions may spur but also impede motivational benefits. Impeded motivational benefits may be problematic given the high degree of persistence, effort and recovery from setbacks that is needed when engaging in innovative endeavours (Bledow, Frese, Anderson, Miriam, & Farr, 2009; Moenkemeyer, Hoegl, & Weiss, 2012).

The underlying premise of our study is that the development of an optimal motivation throughout an innovation process depends on the extent to which innovative work behaviour stimulates positive motivational states. This premise resonates with a basic tenet of

self-determination theory, namely that behavioural actions may yield motivational benefits if they allow individuals to simultaneously satisfy three basic needs (i.e., basic need satisfaction comprising the need for autonomy, competence, and relatedness) (Deci & Ryan, 2000). Basic need satisfaction has been demonstrated to form the energetic basis for the development and maintenance of autonomous motivation, which is considered to be a key motivational state during innovation processes (Janssen & Van Yperen, 2004; Shalley, Gilson, & Blum, 2009; Shalley, Zhou, & Oldham, 2004). Hence, not being able to satisfy one's basic psychological needs is likely to obstruct the further development of autonomous motivation.

Extending previous work on motivational consequences of innovative work behaviour, we advance two boundary conditions that indirectly and directly capture the experience of support, a psychological phenomenon that has been acknowledged by self-determination theory to influence the motivational consequences of behavioural actions. First, individuals who aim to bring about innovative change do not exclusively depend on their own behavioural efforts. Hence, innovative work provides ample room for attributing past performance to internal (e.g., abilities or effort) or external causes (e.g., the work environment). It is our contention that individuals who engage in innovative work behaviour but experience little success, will attribute their innovative performance to the restraining influence of their work environment. In contrast, individuals that perform innovative activities and also feel successful will attribute performance to their own behavioural efforts. Thus, we argue that under conditions of low perceived success engaging in innovative work behaviour will not be conducive to basic need satisfaction.

Second, we suggest that the social environment not only affects interpretations of innovative success but also gives meaning to one's innovative work behaviour. In this regard, individuals who perceive support in their innovative work behaviour, are more likely to feel that innovative work behaviour is influential and meaningful (Scott & Bruce, 1994; Zhou &

George, 2001). In contrast, low support for innovation signals that innovative work behaviour is not desirable and that innovative work behaviour is relatively meaningless and will not be influential. Low levels of support for innovation should thus impede the motivational benefits associated with innovative work behaviour (Ryan & Deci, 2008).

Thus, by building on self-determination theory, we propose and test two boundary conditions (i.e., low perceived success and low support for innovation) under which innovative work behaviour is less likely to be associated with motivational benefits (i.e., subsequent basic need satisfaction). In doing so, we believe the current study provides three important contributions to the innovation literature. First, the current study is informative for the innovation bias debate. In recent years, there seems to have grown a perspective in the literature that positive outcomes will invariably arise from all forms of innovation. By studying the outcomes of innovative work behaviour and more specifically, by examining under which conditions IWB will *not* lead to positive outcomes, we contribute to a new, more nuanced perspective on innovation as advocated by Anderson et al. (2014). Second, in the current study, we adopted an interactionist perspective on innovative work behaviour. Zhou and Hoever (2014) recently advanced that future research should take an interactionist perspective to understand “the effects of hindering contexts on innovative people”. We believe the current study extends this perspective. Whereas previous innovation research adopting an interactionist perspective has examined antecedents of innovative work behaviour, we argue that to understand the motivational outcomes of IWB, one needs to involve person-situation interactions. Third, the current study aimed at clarifying an inconsistent finding in previous research (Devloo, Anseel, De Beuckelaer, & Salanova, 2015). While this study found that innovative activities may spur motivational benefits the day after in terms of enhanced basic need satisfaction, it also surprisingly revealed that innovative work behaviour may yield negative consequences for one’s basic need satisfaction. Such

inconsistencies point to the existence of moderators. By including perceived success and support for innovation, the current study sheds new light on this inconsistent finding, explaining under what conditions IWB may not lead to basic need satisfaction.

The Motivational Potential of Innovative Work Behaviour

Innovative work behaviour (IWB) can be described as the intentional generation, promotion and realization of new ideas within a role, group, or organization with the objective of benefiting role performance, the group or organization (Janssen, 2003; Scott & Bruce, 1994; West & Farr, 1990). This set of behavioural activities (i.e., idea generation, promotion, and realization) is considered to correspond with the different stages of an innovation life cycle. However, as innovations do not necessarily result from discrete, sequential stages but rather from discontinuous activities, individuals can be involved in any combination of these three behaviours at one point in time (Scott & Bruce, 1994). Innovative work behaviour can manifest itself at all levels of an organization, going from improved working methods concerning one's own job, the implementation of new communication procedures to facilitate the coordination of activities within teams, to the development of products that can increase the overall competitive position of the organization in the market. Similar to Devloo et al. (2015), we focus on the innovative work behaviour of individuals participating in a product design boot camp. The practice of having technologists and designers participating in innovation boot camps for stimulating individual-level innovative work behaviour has gained popularity in contemporary organizations and should thus be particularly relevant for organizational practice (Clarysse, Mosey, & Lambrecht, 2009).

During the past decades, most research on individual-level innovative work behaviour has focused on the identification of those individual and contextual factors (and their interplay) which are conducive for the optimal motivation of individuals to achieve a high level of IWB (e.g., Janssen & Van Yperen, 2004; Kanter, 1988; Shalley et al., 2004). In

this regard, cognitive evaluation theory has provided the conceptual base for the underlying motivational mechanisms that energize and direct IWB. This theory proposes that the quality of motivation can be understood as the extent to which behaviour is intrinsically motivated (i.e., the desire to perform an activity or task in the absence of external contingencies or constraints) or extrinsically motivated (i.e., performing an activity or task because of an external outcome such as reward, recognition or obligation) (Ryan, 1982).

This conventional dichotomization of motivation (i.e., intrinsic versus extrinsic) has been refined within self-determination theory, which has led to a more dynamic perspective on the development of motivational states within individuals. In particular, self-determination theorists have suggested that individuals have a natural tendency to transform or internalize social norms and new experiences into personally endorsed values and self-regulations (Deci & Ryan, 2000; Vansteenkiste, Niemiec, & Soenens, 2010). Such internalization process is reflected by the degree to which external regulations are successfully integrated by the self; going from controlled motivation (i.e., experience of external pressure when engaging in activities or tasks) at one end of the continuum to autonomous motivation (i.e., experience of volition and free choice when engaging in activities or tasks) at the other end. Autonomous motivation (and intrinsic motivation as its highest form) has been acknowledged as one of the key ingredients in creativity and innovation, because when being autonomously motivated individuals are more likely to explore original perspectives on problems, to process new information more efficiently, to take risks, and stay more focused on pending innovative activities or tasks (Amabile, 1988; Grant & Berry, 2011; Hammond, Neff, Farr, Schwall, & Zhao, 2011; Oldham & Cummings, 1996; Shalley, 1991).

However, despite the importance of intrinsic motivation as a motivational driver of IWB, theoretical and empirical developments have suggested that by exclusively focusing on the motivational antecedents of individual-level innovation, the dynamic nature of innovative

processes are largely overlooked (Anderson et al., 2004). In this regard, Janssen, Van De Vliert and West (2004) have argued that innovation research is in need of the systematic development of research models depicting IWB as an independent variable rather than a dependent variable, and made a call for investigating those factors that regulate the beneficial and costly motivational consequences of individual-level innovation.

In the present study, we respond to this call as we address the consequences of engaging in innovative work behaviour for subsequent motivational states. More specifically, we seek to examine under which conditions people that engage in IWB, are more likely to experience enhanced motivation. The assumption that behaviour may yield motivational benefits, is grounded in self-determination theory which posits that engaging in behaviour may lead to the combined satisfaction of three innate psychological needs; need for autonomy (i.e., exercise control over one's actions), need for competence (i.e., feeling able to execute tasks), and need for relatedness (i.e., feel supported by the social environment) (Deci et al., 2001; Deci, Ryan, & Williams, 1996; Reis, Sheldon, Gable, Roscoe, & Ryan, 2000). In this regard, basic need satisfaction has been advanced as a critical condition for the maintenance and development of autonomous motivation (Ryan & Deci, 2000; Van Den Broeck, Vansteenkiste, De Witte, Soenens, & Lens, 2009). The three basic needs are highly interrelated concepts, with the underlying shared principle being that satisfaction of these fundamental needs provides a subjective feeling that one's work-related behaviour resonates with one's true self. In line with previous studies (e.g. Greguras & Diefendorff, 2010; Leroy, Anseel, Gardner, & Sels, 2015), we therefore conceptualized basic need satisfaction as a higher-order construct.

It is our contention that the extent to which IWB can stimulate the development of optimal motivation, depends on whether this behaviour leads to subsequent basic need satisfaction. IWB has been argued to be a typical form of proactive work behaviour as it

comprises innovative efforts to take control of, and to bring about change within the internal work environment (e.g., improving current work methods or influencing the jobs of colleagues) (Parker & Collins, 2008). It has been proposed by Strauss and Parker (2014) that proactive behaviour is an effective way to satisfy one's psychological needs for autonomy, competence and relatedness, especially because proactive behaviour is self-initiated, involves the pursuit of challenging goals, and is often socially oriented. In contrast, routine task performance (i.e., completing activities that fall within one's formal task requirements) concerns the pursuit of pre-defined and assigned goals (Parker, Turner & Williams, 2006). Hence, we may expect that the motivational potential of routine task is significantly lower than of behaviour that is more autonomously regulated. For example, Muraven, Gagné and Rosman (2008) observed that feeling forced to perform a particular task, compared to autonomously regulated task performance, resulted in greater psychological resource depletion and lower levels of vitality.

We suggest that IWB may create opportunities for individuals to satisfy their basic psychological needs, for example by actively seeking for new ways to do things (leading to the fulfillment of one's need for autonomy), by interacting with key actors of the work environment to promote ideas (leading to the fulfillment of one's need for relatedness) or by putting ideas to work (leading to the fulfillment of one's need for competence). A recent study brought preliminary support for this assumption. In an innovation boot camp, Devloo et al. (2015) found that IWB affected basic need satisfaction as measured the next day, which in turn affected IWB through intrinsic motivation. However, one of the five significant cross-lagged effects of IWB on basic need satisfaction appeared to be negative, thus indicating that IWB leads to a decrease in basic need satisfaction the day after. To address this counterintuitive finding, Devloo et al. (2015) conducted interviews with boot camp trainers and tentatively suggested that "it may well be that at one particular day (i.e., $t+2$), participants

who displayed high levels of IWB somehow got frustrated or were not satisfied with the results of their work due to a shared, external cause” (p. 500).

Such a preliminary ‘external cause’ explanation is consistent with the depiction of innovation as a social process and, as such, being strongly affected by contextual factors and merits further empirical testing. For example, without the support, cooperation or consent from other key actors in the work environment, IWB is unlikely to be associated with positive behavioural outcomes (Janssen et al., 2004; Rank, Pace, & Frese, 2004). We argue that the potential effect of IWB on subsequent basic need satisfaction will also be contingent on the support that individuals receive from the work environment when carrying IWB. In this regard, the importance of the broader work environment in regulating the (positive and negative) motivational consequences of IWB has been demonstrated in previous research. For example, Janssen (2004) found that IWB was associated with negative motivational consequences such as job-related anxiety and burnout, but only if individuals perceived that their innovative efforts were not fairly rewarded by their organization, and that unfair procedures were applied to determine their investments and rewards. Extending this line of research, we propose two boundary conditions under which IWB is more likely to influence subsequent basic need satisfaction. Both conditions indirectly or directly comprise psychological perceptions of support and have been advanced by self-determination theorists as important enablers of basic psychological need satisfaction; namely perceived success and support for innovation.

The Moderating Role of Perceived Success

Perceived success refers to the extent to which individuals feel they have attained desired behavioural outcomes with their innovative efforts. Several motivational theories have been employed to explore how perceptions of progress or success may affect personal well-being. For example, social cognitive theory considers successful performance to be conducive

for the confidence in one's abilities to perform certain activities or tasks (Bandura, 1997; Shim & Ryan, 2005; Tierney & Farmer, 2002). Other theoretical traditions such as goal setting theory and expectancy theory of motivation have posited that the successful attainment of goals is positively associated with self and task satisfaction, and establishes a stable basis for future activities by creating expectations that successful goal attainment will be repeated (Locke & Latham, 1990; Vroom, 1964).

Given the many contextual factors that may affect an innovation process, there is not necessarily a one-to-one relationship between the extent to which individuals actively engage in IWB and how successful their innovative activities will be (Axtell et al., 2000). Indeed, IWB not only requires individual cognitive efforts but also is substantially socially oriented as innovators need to interact with their work environment to obtain relevant knowledge, support or resources to pursue their innovative goals (Kanter, 1988). In other words, being successful in one's innovative efforts is context-dependent and is more likely to occur when innovative work behaviour is facilitated by the broader social environment (Janssen et al., 2004; Mumford, Scott, Gaddis, & Strange, 2002; Shalley & Gilson, 2004).

It is our contention that perceived success is a crucial enabler of the motivational potential of IWB. More specifically, we expect that individuals who perform IWB will only experience increased basic need satisfaction when they feel successful in their innovative efforts. Previous research in social psychology shows that individuals have a tendency to attribute success to personally controllable characteristics, whereas failure is attributed to situational or ad-hoc characteristics (Nickel & Spink, 2010). In a similar vein, we theorize that if individuals perceive that their attempts to pursue innovative change do not appreciably affect outcomes, they are likely to experience a loss of self-determination or control over their own behaviour. From the standpoint of self-determination theory, this loss of control will thwart the satisfaction of the psychological need for autonomy (e.g., unsuccessful attempts to

pursue one's own ideas), relatedness (e.g., unsuccessful attempts to enthuse or benefit others with new ideas), and competence (e.g., unsuccessful attempts to implement ideas) (Deci & Ryan, 2000). Consequently, under these conditions IWB is not expected to be associated with basic need satisfaction. The above-mentioned arguments are in agreement with previous empirical evidence indicating that autonomous behaviour (i.e., pursuing self-determined goals) in concert with perceptions of success (i.e., goal attainment) are more likely to satisfy one's basic psychological needs and consequently psychological well-being (e.g., Sheldon & Elliot, 1999). Furthermore, Sheldon and Kasser (1998) studied the motivational benefits of making progress at self-determined goals and found that the interaction between engaging in autonomous behaviour and perceptions of success predicted increases in psychological well-being of students in both short- (i.e., 5-day interval) and long term (i.e., semester).

In the present study, we have adopted a short-term (i.e., day-level) approach to longitudinally examine the interaction between IWB and perceptions of success in one's innovative efforts on subsequent (i.e., lagged) basic need satisfaction. Our line of reasoning about perceived success as a boundary condition of the relationship between IWB and subsequent basic need satisfaction, leads to the following hypothesis:

Hypothesis 1. Day-level IWB and perceived success interact to positively affect next day's basic need satisfaction in such a way that IWB will have the strongest relationship with lagged basic need satisfaction in case of high levels of perceived success.

The Moderating Role of Support for Innovation

Support for innovation captures the extent to which the direct work environment is seen as supportive and encouraging of innovative efforts to introduce and apply new and improved ways of doing things (Scott & Bruce, 1994; West & Farr, 1990). So far, support for innovation mainly has been approached as a contextual antecedent of creativity and IWB. More specifically, individuals who receive strong support for innovation experience a

psychological safe climate that allows and stimulates them to propose, discuss and develop new ideas (Binnewies, Ohly, & Sonnentag, 2007; West, 2002). However, work environments that support innovation not only legitimize experimentation and risk-taking but have also been argued to send a clear signal that innovative work behaviour is valued and are meaningful (Baer & Oldham, 2006; Scott & Bruce, 1994; Zhou & George, 2001).

Building on this logic, we suggest that the context, in which individuals perform IWB, may reinforce or refute the psychological meaning and value that individuals ascribe to their innovative efforts. Work environments that provide strong support for innovation will help individuals in finding a sense of purpose and meaning in their previously performed IWB. In contrast, individuals that engage in IWB, but simultaneously perceive little support for innovation in their direct work environment, might lead them to devalue the importance of their innovative activities. This makes it less likely that innovation will be perceived as a meaningful aspect of their work. The latter situation should prevent individuals from satisfying their basic psychological needs. In this regard, self-determination posits that meaningful activities are the key for basic need satisfaction, and in turn lead to the maintenance and enhancement of vitality (Reis et al., 2000; Ryan & Deci, 2008). Hence, we hypothesize that IWB will be less likely to satisfy one's need for autonomy, relatedness and competence when it is conducted in a work environment that does not value and support innovation. Consequently, under these conditions, the positive relationship between IWB and subsequent (i.e., lagged) basic need satisfaction is unlikely to occur.

Hypothesis 2: Day-level IWB and support for innovation interact to positively affect next day's basic need satisfaction in such a way that IWB will have the strongest relationship with lagged basic need satisfaction in case of strong support for innovation.

Method

Sample and Procedure

A longitudinal field study (i.e., comprising a seven-day period) was carried out among a group of students from several European universities that were involved in an international innovation training program (i.e., innovation boot camp) at the time of assessment. More specifically, our sample consisted of 108 students in industrial product design and electronic engineering that participated in an innovation boot camp with the aim of developing their innovation and entrepreneurial skills as future R&D professionals. Because eight students dropped out during the program, our final sample consisted of one hundred students, from now referred to as ‘participants’. Seventy-five percent of the participants were men; their mean age was 21.79 years ($SD = 2.23$). At the start of the innovation boot camp, participants were assigned to work on a real-life industrial case, provided by innovation managers of five collaborating organizations. All industrial cases required the development of a green and eco-friendly product concept or prototype and therefore implied the engagement in a product innovation process. Throughout the entire innovation boot camp, participants had the opportunity to interact with their colleagues, instructors and the innovation manager in charge. Furthermore, the product concepts and prototypes that were developed by the participants of this innovation boot camp could be adopted by the collaborating organizations. This illustrates the professional and realistic nature of this innovation boot camp, which should contribute to the external validity of our study.

At the beginning of the innovation boot camp, participants were informed about the purpose of the current (survey-based) study and were told that this study was part of a project with the objective to capture psychological experiences throughout the course of a product innovation process. Demographic information for each participant was provided by his or her university. Participants were asked to complete a web-based diary survey for seven

consecutive days, at the end of each training day. Although the completed surveys were not anonymous (i.e., all daily surveys had to be matched with the corresponding participant, complete confidentiality of the data was guaranteed to all participants. In total, 648 daily surveys were collected from one hundred participants over a period of 7 days. On average, participants filled out the web-based survey 6.5 times ($SD = .87$).

Measures

The daily survey that participants had to complete at the end of each day, focused on the activities they carried out throughout the day with regard to their assigned industrial case. All survey items were formulated in English as English was the common language used by all participants and instructors.

Innovative Work Behaviour (IWB)

We measured daily levels of ‘innovative work behaviour’ with the nine-item scale by Janssen (2000). The three dimensions of IWB (i.e., idea generation, idea promotion and idea realization) were included and respondents were asked to indicate how often they conducted these innovative work behaviours during the day. Sample items are ‘*Create new ideas for difficult issues regarding your case*’ (idea generation); ‘*Mobilize support for innovative ideas*’ (idea promotion); ‘*Transform innovative ideas into useful applications*’ (idea realization). The answers were scored on a seven-point anchored Likert scale ranging from 1 = never to 7 = always. IWB was operationalized as the mean score of its nine indicators. Across all occasions, coefficients alpha of this scale’s ratings was .93.

Basic Need Satisfaction (BNS)

We measured daily levels of ‘basic need satisfaction’ with ten items (or indicators) from the scale of Van Den Broeck and colleagues (2009). Sample items are ‘*The tasks, activities that I had to do today, are in line with what I really want to do*’ (autonomy); ‘*Today, I felt competent*’ (competence); ‘*Today, I felt part of a group/team*’ (relatedness). The answers

were scored on a seven-point anchored Likert scale ranging from 1 = totally disagree to 7 = totally agree. Basic need satisfaction was operationalized as the mean score of its ten indicators. Across all occasions, coefficients alpha of this scale's ratings was .93.

Perceived Success

We measured daily levels of 'perceived success' with three items that were developed for the purpose of this study. Items are *'To what extent did you feel successful regarding your innovative activities today?'*; *'To what extent were you effective in your innovative actions today?'*; *'To what extent do you feel satisfied with the outcome of your innovative activities today?'*. The answers were scored on a seven-point anchored Likert scale ranging from 1 = not at all to 7 = to a very large extent. Perceived success was operationalized as the mean score of its three indicators. Across all occasions, coefficients alpha of this scale's ratings was .91.

Support for Innovation

We measured daily levels of 'support for innovation' with three items from the scale of Scott and Bruce (1994). A sample item is *'Today, our ability to function creatively was respected and appreciated by the people in charge'*. The answers were scored on a seven-point anchored Likert scale ranging from 1 = totally disagree to 7 = totally agree. Support for innovation was operationalized as the mean score of its three indicators. Across all occasions, coefficients alpha of this scale's ratings was .83.

Analytical Approach

Means, standard deviations, Cronbach's alpha coefficients and bivariate correlations were obtained for all scales. First, to verify whether the indicators had loadings on their intended latent factor, a confirmatory factor analysis was performed for the measurement model using indicator scores centered at the person mean (Sonnentag & Jelden, 2009). To assess the adequacy of a multi-factor model, it is common practice to compare this multi-

factor model with a single factor model (e.g., Caprara, Pastorelli, Regalia, Scabini, & Bandura, 2005). Following Caprara and colleagues (2005), we tested three different factor models: (1) a one-factor model which assumed that all constructs (i.e., all multi-item scales) were the expression of one single latent factor (i.e., all the covariances were fixed at 1); (2) a four-factor orthogonal model in which all constructs are assumed to be independent (i.e., all the covariances were fixed at 0); and (3) a four-factor oblique model in which all factors are interrelated (i.e., all the covariances were freely estimated).

Because our dataset exists of repeated daily measurements ($N = 648$) nested within 100 individuals, we employed multilevel modeling (with HLM 6) to test all hypotheses of this study. To investigate the hypothesized lagged interactions, we temporally separated the dependent variable ‘basic need satisfaction’ by one survey period (time $t+1$; being the subsequent day). Consequently, the total sample size on which we tested our hypotheses was reduced from 648 to 526 observations (i.e., note that scores were not lagged across non-consecutive observations). We also controlled for serial dependence in the dependent variable (i.e., basic need satisfaction at day $t+1$), and specified a baseline model with an autoregressive effect, that is including basic need satisfaction as an independent variable measured at the previous day (at day t). The autoregressive effect implements a critical statistical control in that it adequately captures daily changes in basic need satisfaction. All variables (i.e., innovative work behaviour, perceived success, support for innovation, and basic need satisfaction) were assessed at level 1 (i.e., participant level) and centered around the sample’s mean (Fritz & Sonnentag, 2007). According to Ohly, Sonnentag, Niessen, & Zapf (2010), centering around the sample’s mean is appropriate when a research question focuses on day-level relationships and not necessarily on within-person effects that are completely free from between-person differences. Centering around the sample’s mean implies that the value of a predictor variable can only be considered high or low relative to other people, but not relative

to different observations within the same person. To test the hypothesized moderation effect of daily perceived success (Hypothesis 1) and support for innovation (Hypothesis 2) on the lagged relationship between daily IWB and subsequent basic need satisfaction, we specified a series of nested multilevel interaction models. In model 1 we entered the previous day's level of the dependent variable (i.e., basic need satisfaction) and the main effects of IWB and each moderator; and in Model 2 we entered their two-way interaction term.

Results

The means, standard deviations, Cronbach's alpha coefficients and intercorrelations among the study variables are summarized in Table 1. All Cronbach's alpha coefficients meet the minimum criterion value of .70 (i.e., ranging from .83 to .93).

Insert Table 1 here

Table 2 contains the results of the confirmatory factor analysis of the (multi-item) constructs as measured at day 1. The chi-square (χ^2) of all the tested models was statistically significant, indicating the examination of meaningful effects; the oblique model shows superior fit indices (see AIC; Akaike, 1987) and meets conventional model fit criteria, χ^2 (262, $N = 85$) = 367.02, $p < .001$ (RMSEA = .07; CFI = .89; TLI = .88; AIC = 493.02).

Insert Table 2 here

Before testing our hypothesized model, we estimated the amount of variance in our day-level variables that can be attributed to the within-person and between-person level. For the dependent variable basic need satisfaction 56 % of the total variance (i.e., ratio of the within-person variance divided by the sum of the between-person and the within-person

variance) could be explained within individuals. Substantial within-individual variances were also found for IWB (48 %), perceived success (63%), and support for innovation (62%). Taken together, these substantial within-person variances suggest that analyses at the day-level, using multilevel methodology, are appropriate. Table 3 includes the multi-level estimates of the hypothesized interaction models. Hypothesis 1 predicted that perceived success moderates the lagged relationship between day-level IWB and next day's basic need satisfaction. In line with what we expected, results indicate that the interaction between day-level IWB and perceived success is significant as a predictor of subsequent day-level basic need satisfaction (Model 2; $\gamma = 0.07$, $SE = .02$, $p < .01$), explaining an additional 4 % of the variance over and above the variance explained by the (hierarchically nested) 'previous' model (Model 1 including previous day's level of basic need satisfaction and the main effects of IWB and perceived success).

Insert Table 3 here

Figure 1 depicts this interaction effect. An inspection of Figure 1 indicates that the relationship between day-level IWB and lagged basic need satisfaction was positive in case of high levels of perceived success, but not when perceived success was low. To further explore this interaction pattern a simple slope test was performed according to the procedure of Preacher, Curran and Bauer (2006). This simple slope test confirmed that on days when people perceived high levels of success (one *SD* above the mean), day-level IWB was positively related with next day's basic need satisfaction ($\gamma = 0.13$, $SE = 0.06$; $z = 2.24$; $p < .01$), but on days when people perceived low levels of success (one *SD* below the mean), IWB was not related with next day's basic need satisfaction ($\gamma = -0.02$, $SE = 0.05$; $z = -0.30$; *ns*).

Insert Figure 1 here

Hypothesis 2 predicted that support for innovation moderates the lagged relationship between day-level IWB and next day's basic need satisfaction. As hypothesized, results indicate that the interaction between day-level IWB and support for innovation is significantly related with next day's basic need satisfaction ($\gamma = 0.10$, $SE = .03$, $p < .01$), explaining an additional 1% of the variance over and above the variance explained by the (hierarchically nested) 'previous' model (Model 1 including previous day's level of basic need satisfaction and the main effects of IWB and support for innovation). Figure 2 depicts this interaction effect. As hypothesized, the relationship between day-level IWB and next day's basic need satisfaction was positive only when support for innovation was strong. Additionally, a simple slope test revealed that on days when individuals experienced strong support for innovation (one *SD* above the mean), day-level IWB was positively related with next day's basic need satisfaction ($\gamma = 0.14$, $SE = 0.05$; $z = 2.61$; $p < .01$), but on days when individuals experienced weak support for innovation (one *SD* below the mean), IWB was not significantly related with next day's basic need satisfaction ($\gamma = -0.06$, $SE = 0.05$; $z = -1.11$; *ns*).

Insert Figure 2 here

Discussion

Over the last decade, researchers have drawn attention to the dynamic nature of innovation processes by arguing that performing IWB leads to a variety of psychological consequences such as the development of job attitudes, well-being or stress (Anderson et al., 2004; Janssen et al., 2004; Janssen, 2003, 2004). Extending the focus on the outcomes of engaging in IWB, our study set out to elucidate the boundary conditions under which IWB is more likely to be associated with motivational benefits in terms of subsequent basic need satisfaction.

Theoretical Implications

Our study provides an important step beyond a previous line of research which mainly has considered motivational states as a starting point for innovative action (e.g., Amabile, 1988; Devloo et al., 2015; Michael, Hou, & Fan, 2011; Scott & Bruce, 1994; Yuan & Woodman, 2010). Although this previous line of research has been crucial for our understanding of the antecedents that may instigate favourable motivational states for IWB (i.e., autonomous motivation), it remains unclear how optimal motivation can be reached and maintained throughout an innovation cycle. By addressing how situational cues may affect the motivational consequences of IWB, our study provides a different framework to approach the motivation-IWB relationship. This framework highlights the potential of IWB in interaction with the work environment to satisfy one's basic psychological needs (i.e., autonomy, relatedness, competence). The impact of IWB on basic need satisfaction should be particularly important for the development of subsequent motivational states, as self-determination theory posits that autonomous motivation is nurtured by the combined satisfaction of these three basic needs (Deci & Ryan, 2000).

A test of hypotheses derived from self-determination theory revealed that although IWB may result in increased levels of BNS, this relationship will be contingent on specific boundary conditions. Consistent with Hypothesis 1, we found that a lack of perceived success hampered the potential of IWB to satisfy the need for autonomy, relatedness and competence. Furthermore we found support for Hypothesis 2. That is, individuals engaging in IWB were found to need sufficient support for innovation to satisfy their basic needs. Our findings attest to the social nature of innovation processes, implying that innovative activities are subject to factors that exceed one's behavioural intentions and efforts, such as perceptions of support (Axtell et al., 2000; Shalley et al., 2004). Taken together, our study complements previous innovation research that has focused on the motivational underpinnings of innovation processes by extending theoretical knowledge on how and when individuals that engage in

IWB may subsequently reach and maintain optimal levels of motivation. By integrating aspects from self-determination theory in our study we were able to make specific predictions regarding the conditions under which basic psychological needs are more likely to be satisfied. This way, we have established a self-determination theory framework that can help future innovation research to identify new boundary conditions that may facilitate or impede the motivational benefits of IWB.

Practical Implications

Managers and other practitioners often come to the conclusion that in spite of their efforts to stimulate individual-level innovation (e.g., by organizing idea suggestion systems, creativity training sessions, or organizational reward programs), individuals are not always able to preserve their initial motivation and energy after performing innovative work behaviours. For example, individuals who try to change well-established working methods may be confronted with hostile reactions from their colleagues and thus, as a result of their innovative work behaviours, run the risk of discouragement and disillusionment. Therefore, interventions or practices that exclusively focus on providing an initial motivational trigger that may lead to innovative work behaviours, but neglect the motivational consequences of IWB, are unlikely to be effective in the long term. Situational cues or interventions aimed at maintaining or strengthening one's motivational states over a longer period of time seem to be crucial. There are a number of practical recommendations that can be derived from our research if one aims at maximizing the motivational benefits of IWB.

First, as innovative success or failure does not entirely depend on the innovative efforts of individuals, individuals displaying IWB run the risk of losing their sense of self-determination along the way. Our results indicate that this loss of self-determination might undermine the potential of IWB to satisfy individuals' basic needs. Therefore, in case of unsuccessful attempts to innovate, people could be encouraged to reflect on their own

innovative performance by which they should be less tempted to exclusively attribute their innovative failures to external factors (Anseel, Lievens, & Schollaert, 2009; Carette & Anseel, 2012). By reflecting on one's own innovative performance, unsuccessful IWB would become informative and could therefore provide learning opportunities for subsequent innovative performance behavioural attempts highlighting new routes that lead to need satisfaction and revitalized energy.

Furthermore, our findings imply that considerable and frequent efforts should be undertaken to establish positive daily perceptions of support for innovation, as it helps individuals to draw motivation from their past innovative work behaviour. In this regard, an emerging body of research highlights the crucial role of direct supervisors in signaling such support as they are expected to respond to and evaluate new ideas and initiatives voiced by individuals (e.g., Eisenbeiss, Van Knippenberg, & Boerner, 2008; Michaelis, Stegmaier, & Sonntag, 2010).

Limitations and Avenues for Future Research

A first limitation of our study is that our findings are based on self-ratings of innovative work behaviour (IWB). Due to their subjectivity, self-ratings may be biased implying that the observed correlations are inflated (Harris & Schaubroeck, 1988; Janssen & Van der Vegt, 2011). In the current research setting, more objective indicators of individual innovation were hard to come by given that we focused on daily levels of IWB that not always resulted in results that could be externally evaluated. However, to reduce the threat of common-method bias (i.e., as we relied on self-ratings), the independent (i.e., innovative work behavior, IWB) and dependent variable (i.e., basic need satisfaction, BNS) were separated by one time-lag in our analysis. In a similar vein, it should be noted that our study relied on psychological perceptions of support for innovation and not objective support indicators. Although self-reported data is widely used in psychological research, particularly

in the measurement of cognitions and perceptions (Diliello, Houghton, & Dawley, 2011), future research could adopt an improved design by including more objective measures of support for innovation (e.g., number of feedback interactions with instructors and innovation managers; material resources that were provided to each participant).

A second limitation is the fact that we could not differentiate between the three distinct components of IWB in terms of idea generation, promotion, and realization. Consistent with the work of Janssen (e.g., 2000, 2001, 2003, 2004), we found high intercorrelations between the components of innovative work behaviour (i.e., idea generation, promotion and realization). Although the innovative work behaviour scale has been widely used and is a well-respected scale (e.g., Battistelli, Montani, & Odoardi, 2013; Chang, Hsu, Liou, & Tsai, 2013, Yu, Yu-Fang, & Yu-Cheh, 2013), it did not allow us to disentangle separate sequences of specific innovative components. The three components of innovative behaviour are typically strongly related, as people can be involved in any combination of these three behaviours at one point in time (Scott & Bruce, 1994). However, an emerging body of research is drawing attention to the differentiation between idea generation, promotion, and implementation, and their unique behavioural and motivational dynamics (e.g., Baer & Brown, 2012; Bledow, Frese, Anderson, Miriam, & Farr, 2009; Yaping Gong, Zhou, & Chang, 2013). Hence, exploring what the unique motivational benefits are for each type of innovative work behaviour and how support from the work environment (e.g., support for innovation) may affect the unique behavioural and motivational dynamics, is a fruitful avenue for future research. In this regard, an experimental research design seems an adequate approach to isolate the three different innovative work behaviours from each other and highlight their corresponding motivational benefits.

A third limitation is the fact that we did not include measures of causal attributions. The reasoning behind the hypothesized moderation effect of perceived success concerns the

causal attributions individuals make regarding their own innovative performance. In other words, this relationship concerns a mediated moderation model as we argue that perceived success enables the association between innovative work behaviour and basic need satisfaction by stimulating internal attribution. However, in the current paper we could not empirically test the impact of causal attributions and additional research is required to further elaborate on the role of causal attributions during an innovation process.

A fourth limitation of our study concerns the fact that studying motivational benefits and costs of IWB at a day-level. Given the fact that our study took place during an ongoing innovation boot camp that consisted of several consecutive days, we designed our data-collection points accordingly. The day-level approach of the current study seems appropriate as the innovation boot camp demanded short-term results and provided participants with the opportunity to fully dedicate their time to a single innovation project. However, innovation literature has provided little guidance with respect to the identification of adequate time frames to study innovative work behavior. For example, due to the time-frame we chose, we are not able to draw conclusions concerning how the relationship between IWB and BNS takes shape within the same day. It is plausible that by engaging in IWB, participants might have experienced increased levels of BNS on the same day. Future research could rely on the experience sampling method to obtain more frequent measures of IWB and BNS to study short-term (e.g., within-day) fluctuations (Nielsen & Cleal, 2011). Furthermore, it remains unclear what the long-term effects of IWB are on motivation, especially in contexts where IWB needs to be combined with other work behaviours that are less innovative in nature. In this regard, future research should also verify whether the assumptions of our study still hold when using a different time-frame (i.e., in terms of weeks or months) or a different context (i.e., organizations). In addition, one may expect that a long-term perspective on the relationship between IWB and motivation will reveal the presence of other boundary

conditions (e.g., organizational climate or team characteristics) that are less susceptible to momentary fluctuations than the constructs under study (e.g., daily perceptions of success).

Conclusion

Although innovation research has devoted much attention to the motivational underpinnings of innovation processes, little theory and empirical evidence exists to explain the motivational benefits and costs of engaging in innovative work behaviour. In our study we have adopted a self-determination perspective to deepen knowledge on the boundary conditions under which innovative work behaviour is to be associated with motivational benefits in terms of basic need satisfaction. Our results suggest that the potential of innovative work behaviour to satisfy subsequent basic needs, is contingent on indirect and direct perceptions of support for innovation. For organizations, this finding implies that efficiently stimulating innovative work behaviour does not only depend on providing an initial motivational trigger. A sufficient effort should be made to create a supportive environment for innovation, which will strengthen the motivational benefits that result from engaging in innovative work behaviour over time.

References

- Akaike, H. (1987). Factor-analysis and AIC. *Psychometrika*, 52, 317-332.
- Amabile, T. M. (1988). A model of creativity and innovation in organizations. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behaviour* (pp. 187–209). Greenwich: CT: JAI Press.
- Anderson, N., De Dreu, C. K. W., & Nijstad, B. A. (2004). The routinization of innovation research: A constructively critical review of the state-of-the-science. *Journal of Organizational Behaviour*, 25, 147–173.
- Anderson, N., Potocnik, K., & Zhou, J. (2014). Innovation and creativity in organizations: A state-of-the-science review, prospective commentary, and guiding framework. *Journal of Management*, 40, 1297-1333.
- Anseel, A., Lievens, F., & Schollaert, E. (2009). Reflection as a strategy to enhance task performance after feedback. *Organizational Behaviour and Human Decision Processes*, 110, 23-35.
- Axtell, C. M., Holman, D. J., Unsworth, K. L., Wall, T. D., Waterson, P. E., & Harrington, E. (2000). Shopfloor innovation: Facilitating the suggestion and implementation of ideas. *Journal of Occupational and Organizational Psychology*, 73, 265–285.
- Baer, M., & Brown, G. (2012). Blind in one eye: How psychological ownership of ideas affects the types of suggestions people adopt. *Organizational Behavior and Human Decision Processes*, 118, 60-71.
- Baer, M., & Oldham, G. R. (2006). The curvilinear relation between experienced creative time pressure and creativity: Moderating effects of openness to experience and support for creativity. *Journal of Applied Psychology*, 91, 963–970.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

- Battistelli, A., Montani, F., & Odoardi, C. (2013). The impact of feedback from job and task autonomy in the relationship between dispositional resistance to change and innovative work behaviour. *European Journal of Work and Organizational Psychology*, 22, 26-41.
- Binnewies, C., Ohly, S., & Sonnentag, S. (2007). Taking personal initiative and communicating about ideas: What is important for the creative process and for idea creativity? *European Journal of Work and Organizational Psychology*, 16, 432–455.
- Bledow, R., Frese, M., Anderson, N., Miriam, E., & Farr, J. (2009). A dialectic perspective on innovation: Conflicting demands, multiple pathways, and ambidexterity. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 2, 305–337.
- Caprara, G. V., Pastorelli, C., Regalia, C., Scabini, S., & Bandura, A. (2005). Impact of adolescents ' filial self-efficacy on quality of family functioning and satisfaction. *Journal of Research on Adolescence*, 15, 71–97.
- Carette, B., & Anseel, F. (2012). Epistemic motivation is what gets the learner started. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 5, 306–309.
- Clarysse, B., Mosey, S., & Lambrecht, I. (2009). New trends in technology management education: A view from Europe. *Academy of Management Learning & Education*, 8, 427-443.
- Deci, E.L., & Ryan, R. M. (2000). The “ What ” and “ Why ” of goal pursuits : Human needs and the self-determination of behaviour. *Psychological Inquiry*, 11, 37–41.
- Deci, E.L., Ryan, R. M., Gagne, M., Leone, D. R., Usunov, J., & Kornazheva, B. P. (2001). Need satisfaction, motivation, and well-being in the work organizations of a former eastern bloc country: A cross-cultural study of self-determination. *Personality and Social Psychology Bulletin*, 27, 930–942.

- Deci, E. L., Ryan, R. M., & Williams, G. C. (1996). Need satisfaction and the self-regulation of learning. *Learning and Individual Differences*, 8, 165–183.
- Devloo, T., Anseel, A., De Beuckelaer, A., & Salanova, M. (2015). Keep the fire burning: Reciprocal gains of basic need satisfaction, intrinsic motivation and innovative work behaviour. *European Journal of Work and Organizational Psychology*, 24, 491-504.
- Diliello, T. C., Houghton, J. D., & Dawley, D. (2011). Narrowing the creativity gap: The moderating effects of perceived support for creativity. *The Journal of Psychology*, 145, 151-172.
- Eisenbeiss, S. A., Van Knippenberg, D., & Boerner, S. (2008). Transformational leadership and team innovation: Integrating team climate principles. *Journal of Applied Psychology*, 93, 1438–1446.
- Fritz, C., & Sonnentag, S. (2007). Antecedents of day-level proactive behaviour: A look at job stressors and positive affect during the workday. *Journal of Management*, 35, 94–111.
- Gong, Y. P., Zhou, J., & Chang, S. (2013). Core knowledge employee creativity and firm performance: The moderation role of riskiness orientation, firm size, and realized absorptive capacity. *Personnel Psychology*, 66, 443-482.
- Grant, A. M., & Berry, J. W. (2011). The necessity of others is the mother of invention: Intrinsic and prosocial motivations, perspective taking, and creativity. *Academy of Management Journal*, 54, 73–96.
- Greguras, G. J., & Diefendorff, J. M. (2010). Why does proactive personality predict employee life satisfaction and work behaviours? A field investigation of the mediating role of the self-concordance model. *Personnel Psychology*, 63, 539–560.
- Hammond, M. M., Neff, N. L., Farr, J. L., Schwall, A. R., & Zhao, X. (2011). Predictors of individual-level innovation at work: A meta-analysis. *Psychology of Aesthetics, Creativity, and the Arts*, 5, 90–105.

- Harris, M., & Schaubroeck, J. (1988). A meta-analysis of self-supervisor, self-peer, and peer-supervisor ratings. *Personnel Psychology*, 41, 43–62.
- Janssen, O. (2000). Job demands, perceptions of effort–reward fairness and innovative work behaviour. *Journal of Occupational and Organizational Psychology*, 73, 287–302.
- Janssen, O. (2001). Fairness perceptions as a moderator in the curvilinear relationships between job demands, and job performance and job satisfaction. *Academy of Management Journal*, 44, 1039–1050.
- Janssen, O. (2003). Innovative behaviour and job involvement at the price of conflict and less satisfactory relations with co-workers. *Journal of Occupational and Organizational Psychology*, 76, 347–364.
- Janssen, O. (2004). How fairness perceptions make innovative behaviour more or less stressful. *Journal of Organizational Behaviour*, 25, 201–215.
- Janssen, O., Van De Vliert, E., & West, M. (2004). The bright and dark sides of individual and group innovation: A special issue introduction. *Journal of Organizational Behaviour*, 25, 129–145.
- Janssen, O., & Van der Vegt, G. S. (2011). Positivity bias in employees' self-rating of performance relative to supervisor ratings: The roles of performance type, performance-approach goal orientation, and perceived influence. *European Journal of Work and Organizational Psychology*, 20, 524–552.
- Janssen, O., & Van Yperen, N. W. (2004). Employees' goal orientations, the quality of leader-member exchange, and the outcomes of job performance and job satisfaction. *Academy of Management Journal*, 47, 368–384.
- Kanter, R. (1988). When a thousand flowers bloom: Structural, collective, and social conditions for innovation in organizations. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behaviour* (pp. 169–211). Greenwich, CT: JAI Press.

- Leroy, H., Anseel, F., Gardner, W. L., & Sels, L. (2015). Authentic leadership, authentic followership, basic need satisfaction, and work role performance: A cross-level study. *Journal of Management*, *41*, 1677-1697.
- Locke, E. A., & Latham, G. P. (1990). Work motivation and satisfaction: Light at the end of the tunnel. *Psychological Science*, *1*, 240–246.
- Michael, L. A. H., Hou, S. T., & Fan, H. L. (2011). Creative self-efficacy and innovative behaviour in a service setting: Optimism as a moderator. *The Journal of Creative Behaviour*, *45*, 258–272.
- Michaelis, B., Stegmaier, R., & Sonntag, K. (2010). Shedding light on followers' innovation implementation behaviour: The role of transformational leadership, commitment to change, and climate for initiative. *Journal of Managerial Psychology*, *25*, 408–429.
- Moenkemeyer, G., Hoegl, M., & Weiss, M. (2012). Innovator resilience potential: A process perspective of individual resilience as influenced by innovation project termination. *Human Relations*, *65*, 627–655.
- Mumford, M. D., Scott, G. M., Gaddis, B., & Strange, J. M. (2002). Leading creative people: Orchestrating expertise and relationships. *The Leadership Quarterly*, *13*, 705–750.
- Muraven, M., Gagne, M., & Rosman, H. (2008). Helpful self-control: Autonomy support, vitality, and depletion. *Journal of Experimental Social Psychology*, *44*, 573-585.
- Nielsen, K., & Cleal, B. (2011). Under which conditions do middle managers exhibit transformational leadership behaviors? An experience sampling method study on the predictors of transformational leadership behaviors. *The Leadership Quarterly*, *22*, 344-352.
- Nickel, D., & Spink, K. S. (2010). Attributions for health-related physical activity. *Journal of Applied Social Psychology*, *40*, 2927–2945.

- Ohly, S., Sonnentag, S., Niessen, C., & Zapf, D. (2010). Diary studies in organizational research: An introduction and some practical recommendations. *Journal of Personnel Psychology, 9*, 79-93.
- Oldham, G. R., & Cummings, A. (1996). Employee creativity: Personal and contextual factors at work. *Academy of Management Journal, 39*, 607–634.
- Parker, S. K., & Collins, C. G. (2008). Taking stock: Integrating and differentiating multiple proactive behaviours. *Journal of Management, 36*, 633–662.
- Parker, S. K., Williams, H. M., & Turner, N. (2006). Modeling the antecedents of proactive behavior at work. *Journal of Applied Psychology, 91*, 636-652.
- Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006). Computational tools for probing interactions in multiple linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioural Statistics, 31*, 437–448.
- Rank, J., Pace, V. L., & Frese, M. (2004). Three avenues for future research on creativity, innovation, and initiative. *Journal of Applied Psychology, 53*, 518–528.
- Reis, H. T., Sheldon, K. M., Gable, S. L., Roscoe, J., & Ryan, R. M. (2000). Daily well-being: The role of autonomy, competence, and relatedness. *Personality and Social Psychology Bulletin, 26*, 419–435.
- Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology, 43*, 450–461.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *The American Psychologist, 55*, 68–78.
- Ryan, R. M., & Deci, E. L. (2008). From ego depletion to vitality: Theory and findings concerning the facilitation of energy available to the self. *Social and Personality Psychology Compass, 2*, 702–717.
- Scott, S. G., & Bruce, R. A. (1994). Determinants of innovative behaviour: A path model of individual innovation in the workplace. *Academy of Management Journal, 37*, 580–607.

- Shalley, C. E. (1991). Effects of productivity goals, creativity goals, and personal discretion on individual creativity. *Journal of Applied Psychology*, 76, 179–185.
- Shalley, C. E., & Gilson, L. L. (2004). What leaders need to know: A review of social and contextual factors that can foster or hinder creativity. *The Leadership Quarterly*, 15, 33–53.
- Shalley, C. E., Gilson, L. L., & Blum, T. C. (2009). Interactive effects of growth need strength, work context, and job complexity on self-reported creative performance. *Academy of Management Journal*, 52, 489–505.
- Shalley, C. E., Zhou, J., & Oldham, G. R. (2004). The effects of personal and contextual characteristics on creativity: Where should we go from here? *Journal of Management*, 30, 933–958.
- Sheldon, K. M., & Elliot, A. J. (1999). Goal striving, need satisfaction, and longitudinal well-being: The self-concordance model. *Journal of Personality and Social Psychology*, 76, 482–497.
- Sheldon, K. M., & Kasser, T. (1998). Pursuing personal goals: Skills enable progress, but not all progress is beneficial. *Personality & Social Psychology Bulletin*, 24, 1319–1331.
- Shim, S., & Ryan, A. (2005). Changes in self-efficacy, challenge avoidance, and intrinsic value in response to grades: The role of achievement goals. *The Journal of Experimental Education*, 73, 333–349.
- Sonnentag, S., & Jelden, S. (2009). Job stressors and the pursuit of sport activities: A day-level perspective. *Journal of Occupational Health Psychology*, 14, 165–181.
- Strauss, K., & Parker, S. K. (2014). Effective and sustained proactivity in the workplace: A self-determination theory perspective. In M. Gagne (Ed.), *The Oxford handbook of work engagement, motivation, and self-determination theory* (pp. 50-71). New York, NY: Oxford University Press.

- Tierney, P., & Farmer, S. M. (2002). Creative self-efficacy: Its potential antecedents and relationship to creative performance. *Academy of Management Journal*, 45, 1137–1148.
- Van Den Broeck, A., Vansteenkiste, M., Witte, H. De, Soenens, B., & Lens, W. (2009). Capturing autonomy, competence, and relatedness at work: Construction and initial validation of the work-related basic need satisfaction scale. *Journal of Occupational and Organizational Psychology*, 83, 981–1002.
- Vansteenkiste, M., Niemiec, C. P., & Soenens, B. (2010). The development of the five mini-theories of self-determination theory: An historical overview, emerging trends, and future directions. *Advances in motivation and achievement*, 16, 105–166.
- Vroom, V. H. (1964). *Work and motivation*. New York, NY: Wiley.
- West, M. A. (2002). Sparkling fountains or stagnant ponds: An integrative model of creativity and innovation implementation in work groups. *Applied Psychology: An International Review*, 51, 355–387.
- West, M. A., & Farr, J. L. (1990). Innovation at work. In M. A. West & J. L. Farr (Eds.), *Innovation and creativity at work* (pp. 3–13). Chichester: Wiley.
- Yuan, F., & Woodman, R. W. (2010). Innovative behaviour in the workplace: The role of performance and image outcome expectations. *Academy of Management Journal*, 53, 323–342.
- Yu, C., Yu-Fang, T., & Yu-Cheh, C. (2013). Knowledge sharing, organizational climate, and innovative behavior: A cross-level analysis of effects. *Social Behavior and Personality: An International Journal*, 41, 143–156.
- Zhou, J., & George, J. M. (2001). When job dissatisfaction leads to creativity: Encouraging the expression of voice. *Academy of Management Journal*, 44, 682–696.

Zhou, J., & Hoever, I. J. (2014). Research on workplace creativity: A review and redirection.

Annual Review of Organizational Psychology and Organizational Behavior, 1, 333-359.

Table 1

Descriptive statistics, correlation coefficients and Cronbach's α

<i>Variables</i>	<i>M</i>	<i>SD</i>	α	1	2	3	4
1. Day-level IWB	4.60	0.92	.93		.64**	.34**	.27**
2. Day-level perceived success	4.72	1.06	.91	.74**		.49**	.34**
3. Day-level support for innovation	5.02	0.97	.83	.47**	.61**		.41**
4. Day-level BNS (day t+1)	4.86	0.83	.85	.53**	.71**	.75**	

Note. Correlations below the diagonal represent the between-person level ($N = 100$). To calculate between-person correlations, variables were aggregated across occasions.

Correlations above the diagonal represent the within-person level ($N = 526$). * $p < .05$; ** $p < .01$.

Table 2

Fit indices of confirmatory factor analyses (N=85)

<i>Models</i>	χ^2	<i>df</i>	RMSEA	CFI	TLI	AIC
1. Unique factor model	430.69	268	.09	.84	.82	544.69
2. Orthogonal model	397.47	268	.08	.87	.85	511.47
3. Oblique model	367.02	262	.07	.89	.88	493.02

Note. χ^2 = Chi-square; *df* = degrees of freedom; RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; AIC= Akaike Information Criterion.

Table 3

HLM estimates of the hypothesized interactive effects on next day's basic need satisfaction (day $t+1$)

Predictor	Model 1 ^a	Model 2 ^a	Model 1 ^b	Model 2 ^b
Intercept	4.81 (0.04)**	4.78 (0.04)**	4.81 (0.04)**	4.80 (0.03)**
Previous level basic need satisfaction	0.36 (0.05)**	0.38 (0.05)**	0.31 (0.05)**	0.32 (0.05)**
Day-level IWB	0.06 (0.05)	0.06 (0.05)	0.04 (0.05)	0.04 (0.05)**
Day-level perceived success	-0.04 (0.05)	-0.01(0.05)		
Day-level support for innovation			0.12 (0.04)**	0.15(0.04)**
Day-level IWB x perceived success		0.07 (0.02)**		
Day-level IWB x support for innovation				0.10 (0.03)**
ΔR^2	.35	.04	.37	.01

Note. $N = 526$ observations nested within 100 individuals. Next day's Basic Need Satisfaction is the dependent variable. All predictors are Level 1 variables. Values are unstandardized regression coefficients (γ). Standard errors are indicated in parentheses. ^a Moderation analysis with perceived success (Hypothesis 1). ^b Moderation analysis with support for innovation (Hypothesis 2). ΔR^2 = Variance explained over and above the variance explained by the previous model. Model 1 was compared with the null model. * $p < .05$; ** $p < .01$.

Figure 1. *Interaction effect of day-level innovative work behaviour (IWB) and perceived success on next day's basic need satisfaction (Hypothesis 1)*

Figure 2. *Interaction effect of day-level innovative work behaviour (IWB) and support for innovation on next day's basic need satisfaction (Hypothesis 2)*